

EXHIBIT 1

Recovery of Titanic's Marconi Wireless Telegraph Transmitting Apparatus

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1. Introduction

The wreck of *Titanic* is the last surviving witness to the disaster, with stories left to tell to those who are willing to listen. *Titanic*'s Marconi wireless telegraph apparatus literally represents the actual voice of *Titanic* and as such, should be recovered from the wreck as a matter of responsible stewardship of both the *Titanic* wreck site and the ship's legacy.

2. Background

The Marconi wireless telegraph transmitting apparatus played a crucial role in the *Titanic* disaster. After *Titanic* left the shores of Ireland on her way across the Atlantic, the wireless transmitter served as the only link between *Titanic* and the outside world. Throughout most of the voyage, ice reports from other ships told *Titanic*'s Captain Smith when the ship could be expected to encounter ice. The reports from the wireless were so meaningful that Smith briefed his officers about the approaching ice they described just 9 hours before the disaster. One popular bit of *Titanic* folklore is that another ship, the SS *Californian*, tried to call *Titanic* up on the wireless about the ice conditions and was rebuffed by a busy operator, but in fact the *Californian*'s operator failed to use proper telegraph protocol, signaling instead in an informal manner that usually preceded boredom-relieving chitchat. Even if the *Californian* message had been delivered, it would not have added to the information that Captain Smith had already received and briefed to his watch officers earlier in the day.

The night before the collision, the Marconi transmitter inexplicitly broke down. The two Marconi Company operators who were assigned to *Titanic* attempted on their own initiative to diagnose the fault and repair it on their own, in violation of their Company's regulations that instructed them to leave such repair for Marconi engineers ashore. After several hours of trial and error, they found and fixed the fault in the electrical windings of the high-power transformer. The transmitter was restored to its full range of approximately 250 nautical miles (NM) or greater, instead of the much-reduced 70NM range of the emergency backup. Had the operators not taken matters into their own hands, *Titanic*'s Marconi transmitter might not have had the range the following night to reach her eventual rescuer, SS *Carpathia*.

But the most profound impact that *Titanic*'s Marconi transmitter made on the history of the disaster came after the collision. One of Captain Smith's first actions after learning that his ship was doomed was to go personally to the Marconi Wireless Room and instruct the operators to call for immediate assistance from anyone within range of her signals. The distress call was unmistakable, as *Titanic* was the only ship afloat with the newly-developed rotary spark converter, a technological advancement that gave *Titanic*'s spark a character unlike any other. Other ships carried plain-spark dischargers that consisted of two stationary electrodes separated a short distance across from one another, creating an air gap across which high-power electricity jumped, interrupted by the operator's transmitting key into the long and short static bursts

(Morse code) that radiated into the atmosphere to form intelligible words to those who could receive and understand it. The rotary disc discharger, on the other hand, spun 16 electrodes on a flat disc between two arcing electrodes, giving the interrupted discharge a high-frequency musical note, much as we associate with telegraphs today. So, while the other ships were speaking in “whispers” created by the brute discharge of a high-power spark, *Titanic*’s telegraphic voice floated high above the others in an unmistakable tone. And that tone was heard first calling for help, later delivering *Titanic*’s last words.

Throughout that night, the calls from *Titanic*’s Marconi apparatus were heard by ships far and wide. *Titanic*’s own sister ship, RMS *Olympic*, heard the call and offered to help, even though she was too far away to be of practical assistance. Of the ships that responded, only *Carpathia* was close enough to reach *Titanic* within a reasonable amount of time. All that the other ships could do was to record in their telegraph logs the wireless operator’s description of events as they unfolded aboard the doomed liner. The last signals were recorded by SS *Virginian*, who heard two ragged test signals from *Titanic* before the signals halted abruptly for good. Before 2001, that was all that could be known about the last actions of *Titanic*’s two wireless operators as they performed their duty right up to the end.

In 2001, James Cameron explored the interior of the wreck’s bow section. His interior survey formed the basis of an archaeological baseline for key surviving areas inside the wreck. One such area was the remains of the “Silent Cabin” – the name given to the room in which the Marconi transmitting apparatus was housed – inside the Officers’ Quarters deckhouse on Boat Deck. The sound-proofed walls of that room evidently withstood the hydrodynamic forces that scoured all surrounding spaces, preserving and protecting the complete spark transmitting apparatus within. Over the years, bacteria consumed most of those walls, revealing that apparatus in its entirety to Cameron’s ROV cameras. Amazingly intact, the transmitting switchboards and regulators told the complete story of the operators’ final actions to keep the signals transmitting, even as the ship’s supplied power became weaker and more unstable. The operator’s settings on those components – frozen in time – showed that they understood that their signal was becoming ragged and attempted to tune the set one final time before the power completely failed, thus making sense of the test signals and abrupt signal loss recorded by *Virginian*. Not only did the survey of the Silent Cabin reveal information about the apparatus that no other source could provide, it also gave life to some of the previously-unknown last moments of the heroic crew aboard *Titanic*.

3. Argument

Previous to Cameron’s 2001 survey, little was known of what is arguably the most famous radio in history. Each maritime wireless telegraph installation was tailored by the local Marconi engineer to its host ship, so even the Marconi Company archives had no *Titanic*-specific information in its possession. A single photograph exists of *Titanic*’s Marconi operators’ room, but not one exists of the adjacent Silent Cabin. Parks Stephenson had to basically reconstruct from period documentation a virtual model of the complete transmitting set at the component level, and then manipulate the details and layout of *Titanic*’s unique installation with what could be discerned forensically from the *in situ* wreck imagery. In so doing, he followed as closely as

possible professional archaeology rules in order to preserve the information yielded by the wreck. His initial draft 3D model, constructed from the 2001 imagery, was further refined and validated by a second survey conducted by Cameron in 2005. This 3D model serves as the best available archaeological baseline available of this one-of-a-kind artefact.

Stephenson himself dove on the wreck during the 2005 expedition and took special note of how thin the metal deckhouse roof over the Silent Cabin had become, exposed as it has been for over a century to powerful deep-ocean currents. He re-visited the wreck as a field producer for the History Channel during the 2010 survey expedition led by RMST and again as a dive observer in 2019. Over the years, he has documented the deterioration of the deckhouse overhead, under which the remains of the Marconi wireless transmitter sits. Large sections of that overhead have collapsed since 2005, taking with it some outlying surviving elements of the Marconi system, including a Magneta clock relay box in a nearby athwartships passageway and the Marconigram pneumatic motor in the Elevator Machinery Room. In 2019, Stephenson noted the first holes opening up over the Silent Cabin, in the immediate vicinity of the surviving wall upon which are mounted the intact switchboards and regulators that provided ship's power to the transmitter. In the next few years, the overhead for the Silent Cabin is expected to collapse, potentially burying forever the remains of the world's most famous radio.

Stephenson has checked with various wireless telegraph enthusiast clubs and museums about the feasibility of restoring *Titanic*'s Marconi transmitter, should it ever be recovered. The motor-generator set and disc discharger, all mounted on a single bedplate in the Silent Cabin, is the heart of the system. If recovered, it is conceivable that it could be restored to operable condition, much like *Titanic*'s steam whistles were after they were recovered. Provided with electrical power and managed by new-manufactured condenser, transformer, regulators and phase-matched antenna, *Titanic*'s radio – *Titanic*'s voice – could once again be heard, now and forever. The world's sole surviving 5kW Marconi marine wireless telegraph set would be saved from being lost in the eventual deterioration of the wreck. In an archaeological sense, it has already been documented in the best possible *in situ* state, a normal requirement before any extraction can be considered. It can be argued that the historical and emotional value of this artefact is greater than the aesthetic appearance of the deteriorating deckhouse in which it is currently housed. The physical condition of that deckhouse is rapidly approaching the point where it can no longer protect this artefact and will in fact help to bury it in rubble until Boat Deck itself caves in, carrying the Marconi apparatus deeper into the remains of the wreck, where it could lay unseen forever.

This situation forces the question: how long should we wait for retrieval from the wreck when historically-significant artefacts are at risk of being lost forever? Can the world's most famous radio be an example deserving of a change to the company's previous recovery protocol?

4. Solution

In our opinion, RMST should, as salvor-in-possession, plan for the surgical removal and retrieval of the Marconi wireless telegraph motor-generator set and discharger. Such a waiver should not establish a dangerous precedent, as long as each retrieval continues to be required to

undergo a rigorous approval process before being granted. The artefact should be stabilized and restored to a condition that will make it valuable for public education and outreach. In order to maintain a solid archaeological baseline for this artefact, Parks Stephenson would make his 3D reconstruction of the Silent Cabin available to the RMST Archaeological Team.

6. Summary

The current generation has been privileged to have the *Titanic* wreck in such a condition that much of it can still be studied *in situ*. Given the deterioration observed over the last 34 years, it can be confidently stated that future generations will not be as lucky, even if interest in *Titanic* remains constant. Current policies regarding artefact extraction and retrieval have to date maintained a healthy balance between that which should be left untouched and that which should be recovered for public display and continued research. We are now, though, entering an era when the deterioration of the main sections of the wreck has advanced to the point where historically-significant artefacts are at risk of being lost forever. The Marconi wireless telegraph transmitting apparatus is a good case in point...still retrievable and intact as of this writing, but at imminent risk of being lost. This paper argues that the Marconi motor-generator set and discharger should be recovered at the earliest opportunity so that future generations will have it as a tangible link to *Titanic*, as it was in 1912.